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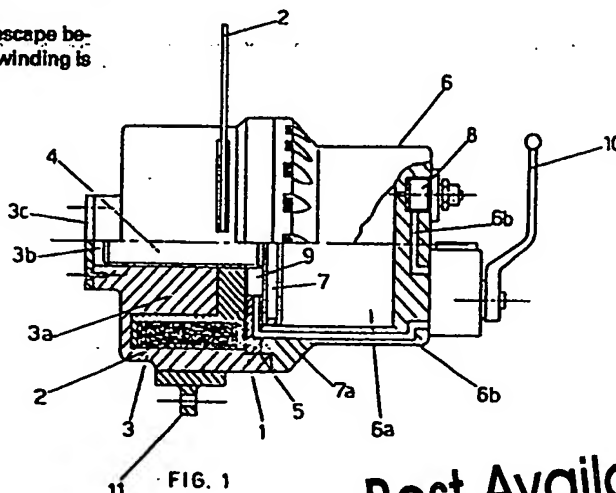
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AT BE CH DE FR GB LI LU NL SE(71) Applicant: Ciancaleoni, Fausto
Via S. Felice, 23
I-06038 Spello (PG)(IT)(71) Applicant: Ciancaleoni, Angelo
Via del Lavoro
Spello (PG)(IT)(72) Inventor: Ciancaleoni, Fausto
Via S. Felice, 23
I-06038 Spello (PG)(IT)(72) Inventor: Ciancaleoni, Angelo
Via del Lavoro
Spello (PG)(IT)(74) Representative: Baldi, Claudio
Piazza Ghislieri, 3
I-60035 Jesi (Ancona)(IT)

(54) Emergency descent apparatus.

(57) An emergency descent apparatus containing a hydraulic brake which is operated by a piston (7) traversing an oil-filled chamber (6a).

The piston (7) is driven by a threaded rod (4) which is turned by the unwinding cable (2).

An adjustable relief valve (8) allows the oil to escape behind the piston (7) and thus the rate of cable (2) unwinding is controlled.



TITLE MODIFIED
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Emergency descent device to let oneself down from buildings
in the event of fire or collapses.

This patent application for an industrial invention has for its object an emergency descent device to be anchored to the bearing walls of buildings, a device which enables people to let themselves down in the event of fires, earthquakes and other calamities.

This invention has been effectively conceived as a safety device to be applied to buildings in order to counter those disastrous situations in which it is immediately necessary to leave the building itself as it is in danger of burning down or collapsing.

In the news, we often hear of people dying trapped within buildings because of fire and/or collapses. It is known that in these cases the only way of escaping is to get down from the outside of the building. Unfortunately, most buildings are not equipped to offer this possibility to all its occupants, consequently there is still a great number of deaths due to people throwing themselves down from the buildings and crashing to the ground in a vain attempt to save themselves.

The most common solution to this problem is in fitting fire escapes, but few buildings have them. Also, these are often useless during earthquakes, can be used only by healthy adults, and not always are they easily accessible to those in need of immediate escape.

In other cases, an attempt has been made to equip buildings with rope ladders anchored near the windows, so as to get down from the outside. As can be imagined, difficulties arise when one is in need of lowering elderly people, children, or
5 invalids.

The device here described introduces an entirely new solution to the problem, suggesting a possibility of descent from the buildings to the ground within a harness hooked to the under-
10 part of a cylinder containing, among other things, a reel of highly resistant cable, the external end of which is hooked to a bearing wall of the building, or to any other safe anchorage point. The descent speed of a person thus harnessed is self-regulated by the device itself in constant values,
15 with no intervention on the part of the user, and independently of the distance to be descended from the building to the ground.

Thanks to this invention, anyone can lower or be lowered, to
20 the ground, confident of touching down at moderate speed, the only prerequisite of the device being an adequate length of cable.

During descent, the unwinding speed of the cable is deter-
25 mined by the angular speed of the reel around which the anchoring cable is wound. This reel is coupled elicoidally with a coaxial screw which abuts onto a disk, the disk being precisely positioned within a cylindrical chamber containing
oil.

30 Opposed to the abovementioned disk which works as a piston, on the bottom of the chamber there is a hole through which the oil, passing through a special valve, can flow into a channel opening into the chamber behind the pressing disk.
35

The rotation of the abovementioned reel thus causes the

advancement of the screw which is coupled to it; the screw pushes the pressing disk forward; the advancement of the disk is a function of the capacity of the relief valve, regulating which it is possible to regulate, as one wishes,
5 the speed of unwinding of the cable, and thus the speed of descent of the entire device.

On this device there is also a hand lever that may be used to interrupt the oil flow in the chamber behind the disk,
10 and thus to stop descent if and when required.

For the sake of clarity, the description of the invention proceeds with reference to the attached table, shown merely for illustration purposes, and not restrictive, in which:

- 15 - fig. 1 is a front view and a sectional view of the device according to the invention;
- fig. 2 is the orthographic projection from left to right of the device according to the invention.

20 With reference to the abovementioned figures, the device, according to the invention, consists of a reel (1) to wind the cable (2); the reel is positioned within a circular containing box (3), which has an internal pin (3a) made to telescope into a cavity on a bottom wall of the reel (1), which
25 is supported and guided in its turning by this pin (3a).

The latter has an axial through hole (3b) for the housing of a screw (4) which is helicoidally coupled to a threaded hole in the centre of the reel (1).

30 A cylindrical cover (6) is flanged onto the containing box (3) first interposing a spacer ring (5); inside this cover there is a circular cavity (6a) where a disk (7) is housed and can slip. The disk is provided with sealing gaskets (7a) to
35 stop the oil contained in the chamber (6a) from flowing between the disk (7) and the walls of the chamber itself (6a).

During assembly, the disk (7) abuts against the flat end of the screw (4) which is screwed to the reel (1) for a very short tract. In this way, as soon as the reel (1) begins to unwind, the screw (4) begins to push the disk (7) and the
5 oil contained in the chamber (6a) is put under pressure.

Consequently, the oil flows out of the bottom of the chamber (6a) passing through a relief valve (8) and, after having crossed a communication duct (6b) in the walls of the cover
10 (6), it flows into the space (9) behind the disk (7); the volume of this space (9) increases in proportion to the stroke of the disk itself (7).

Number (10) is a lever to be placed externally to the bottom
15 of the cover (6). By moving this lever (10) one can operate an oil on/off valve along the duct (6b), so as to stop the discharge of oil, the advancement of the disk (7), the screwing up of the screw (4), the unwinding of the reel (1), thus stopping the descent of the entire device.

*regulating
Valve*

20 Number (11) is a small holed lug to which the descent harness can be attached. Lastly, number (3c) is a cap which closes the central hole (3b) of the cylindrical box (3).

25 From an examination of the structure of the invention, it is easy to see how, after usage, with simple maintenance procedures to return the oil to its chamber (6a), the disk (7) can be returned to its original setback position for further use.

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Claims

1) Emergency descent device to let oneself down from buildings in case of fire or collapses, said device being composed of a cylindrical box (3), onto which a cylindrical cover (6) is flanged after the placing of a spacer ring (5).

5 Inside the circular box (3) there is a pin (3a) which telescopes into a cavity placed on a bottom wall of a reel (1) around which a cable (2) is wound, said cable being anchored outside the box itself (3); the pin (3a) has an axial through hole (3b) which is closed on the outside by a cap

10 (3c) and houses a screw (4). This screw (4) is helicoidally coupled with a threaded hole at the center of the reel (1). So as to hook on the harness, on the outside of the box (3) there is a small holed lug (11) placed on the opposite side of the external anchoring for the cable (2). Inside the cy-

15 lindrical cover (6) there is a circular cavity (6a) which houses and allows slippage of a disk (7) with sealing gaskets (7a); during assembly this abuts against the flat end of the abovementioned screw (4) which is screwed to the reel (1), so that when the reel (1) begins to unwind, the screw (4)

20 pushes the disk (7) and the oil in the chamber (6a) is put under pressure, which causes it to escape through a relief valve (8) and flow through a communication duct (6b) made in the walls of the cover (6) into a space (9) behind the disk. On the outside, the cover (6) is provided with a lever (10)

25 to operate an on/off valve capable of arresting the oil flow in the duct (6b).

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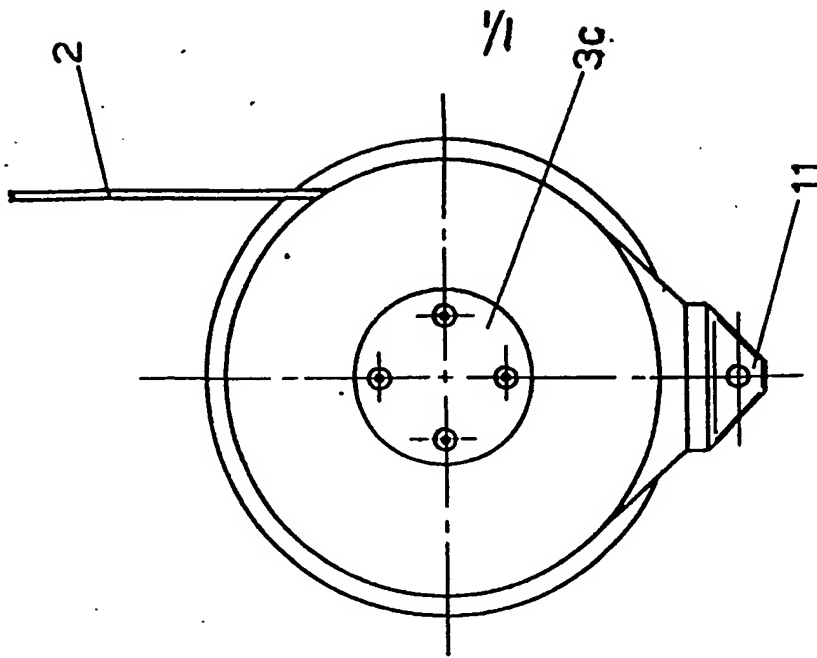


FIG. 2

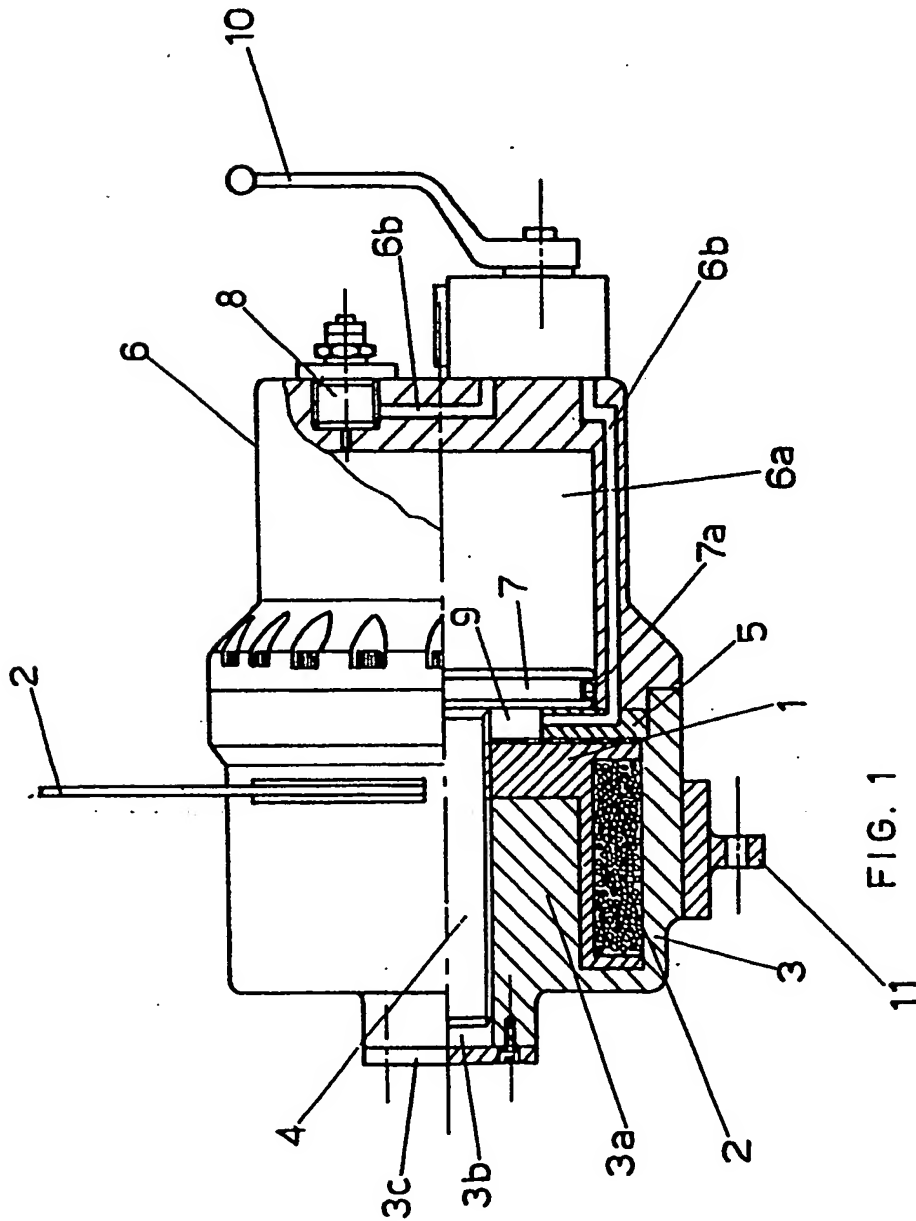


FIG. 1



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EUROPEAN SEARCH REPORT

0252196

Application number

EP 86 83 0225

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	DE-A-3 407 636 (ERKAN) * Whole document *	1	A 62 B 1/12
X	--- US-A-3 595 528 (VIRKKI) * Whole document *	1	
X	--- FR-A-2 153 701 (DU MESNIL DU BUISSON) * Whole document *	1	
A	--- GB-A-1 408 477 (JOHNSON) * Pages 2,3; figures 1,2 *	1	
A	--- US-A-2 261 261 (KUBERA) * Pages 1,2; figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			A 62 B B 66 D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		08-10-1987	WOHLRAPP R.G.
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